

CLAIMS

What is claimed is:

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- 1 1. A method, comprising controlling utilization of a router resource at the interface between
2 a first number of local area network (LAN) ports and a second number of wide area
3 networks (WAN) links by each LAN port according to bandwidth availability of
4 corresponding bundles of the WAN links assigned to each of the LAN ports and a switching
5 capacity of the router resource.
 - 1 2. The method of claim 1 wherein individual ones of the LAN ports are permitted to exceed
2 their fair share of the switching capacity of the router resource if a current switching load
3 due to traffic from all of the LAN ports is less than a maximum switching capacity for the
4 router resource.
 - 1 3. The method of claim 1 wherein if a current switching load due to traffic from all of the
2 LAN ports is equal to a maximum switching capacity of the router resource then those of the
3 LAN ports that are attempting to utilize more than their fair share of the bandwidth
4 availability or the switching capacity are throttled back.
 - 1 4. The method of claim 3 wherein throttling back a LAN port comprises dropping packets
2 inbound on that port at the packets' entry point to the router resource.
 - 1 5. A method, comprising determining, at an entry port of a router resource, whether or not
2 to admit inbound traffic according to a fair allocation distribution scheme that allows traffic
3 to be admitted according to bandwidth availability of a corresponding exit point for the
4 traffic and a current utilization of total switching capacity of the router resource.

1 6. The method of claim 5 wherein the fair allocation scheme allows, traffic to be admitted so
2 long as the bandwidth availability of the corresponding exit point exists.

1 7. The method of claim 5 wherein the fair allocation scheme allows traffic to be admitted
2 even if a port of the router resource associated with that traffic is exceeding an allocated
3 amount of the total switching capacity of the router resource so long as the total switching
4 capacity of the router resource has not been attained.

1 8. The method of claim 7 wherein the fair allocation scheme allows traffic to be admitted so
2 long as the bandwidth availability of the corresponding exit point exists.

1 9. A routing resource configured to provide fair allocation of switching capacity among a
2 number of input ports thereof according to output bandwidth capacity of output links
3 associated with the input ports and total switching capacity utilization of the routing
4 resource.

1 10. The routing resource of claim 9 wherein the fair allocation is maintained by throttling
2 back those input ports which attempt to exceed the output bandwidth capacity of their
3 associated output links or which attempt to utilize more than their allocated share operating
4 at the total switching capacity.

1 11. The routing resource of claim 10 wherein throttling back comprises dropping packets at
2 an ingress point of the routing resource.

1 12. A router configured to communicatively couple a first number of local area network
2 (LAN) ports with a second number of wide area network (WAN) links according to

3 bandwidth availability of bundles of the WAN links assigned to each of the LAN ports
4 and a switching capacity of the router.

1 13. The router of claim 12 wherein the router is further configured to permit individual
2 ones of the LAN ports to exceed their fair share of the switching capacity of a current
3 switching load due to traffic from all of the LAN ports is less than a maximum switching
4 capacity of the router.

1 14. The router of claim 12 wherein the router is further configured to throttle back those
2 of the LAN ports exceeding their fair share of the switching capacity when a total
3 switching load due to traffic from all of the LAN ports is equal to a maximum switching
4 capacity of the router.

1 15. The router of claim 14 wherein throttling back a LAN port comprises dropping one
2 or more packets.

1 16. Computer-readable instructions configured to permit a router resource to determine
2 at an entry point thereof, whether or not to admit inbound traffic according to a fair
3 allocation distribution scheme that allows traffic to be admitted according to bandwidth
4 availability of a corresponding exit point for the traffic and a current utilization of total
5 switching capacity of the router resource.

1 17. The computer-readable instructions of claim 16 wherein the fair allocation scheme
2 allows traffic to be admitted so long as the bandwidth availability of the corresponding
3 exit point exists.

1 18. The computer-readable instructions of claim 16 wherein the fair allocation scheme
2 allows traffic to be admitted even if a port of the router resource associated with that
3 traffic is exceeding an allocated amount of the total switching capacity of the router
4 resource so long as the total switching capacity of the router resource has not been
5 attained.

1 19. The computer-readable instructions of claim 18 wherein the fair allocation scheme
2 allows traffic to be admitted so long as the bandwidth availability of the corresponding
3 exit point exists.

1 20. The computer-readable instructions of claim 16 wherein the fair allocation is
2 maintained by throttling back those input ports which attempt to exceed the output
3 bandwidth capacity of their associated output links or which attempt to utilize more than
4 their allocated share operating at the total switching capacity.

1 21. The computer-readable instructions of claim 20 wherein throttling back comprises
2 dropping packets at an ingress point of the routing resource.

1 22. The computer-readable instructions of claim 16 as embodied on a computer-readable
2 medium.

1 23. The computer-readable instructions of claim 16 as embodied in electronic signals
2 transported through a communication medium.